CLAIMS

1. A method of controlling boom angles in a boom lift vehicle, the boom lift vehicle including a tower boom pivotally coupled at one end to a vehicle base for tower lift function and rotatable relative to the vehicle base for swing function, and a main boom pivotally coupled to an opposite end of the tower boom for main lift function, the method comprising:

defining a tower boom elevation angle as a maximum allowable tower boom angle relative to the vehicle base for transport; and

controlling the main boom when the tower boom is below the tower boom elevation angle to maintain a main boom angle relative to gravity at a first set point angle, the first set point angle being determined as the main boom angle (1) at a start of the swing function or vehicle drive, or (2) at a conclusion of the main lift function when combined with at least one of the swing function or vehicle drive.

2. A method according to claim 1, wherein the main boom includes telescoping sections for main telescope function, the method further comprising controlling the tower boom when the tower boom is above the tower boom elevation angle to maintain a tower boom angle relative to gravity at a second set point angle, the second set point angle being determined as the tower boom angle (1) at a start of the main lift function, the main telescope function, the swing function or vehicle drive, or (2) at a conclusion of the tower lift function when combined with at least one of the main lift function, the main telescope function, the swing function or vehicle drive.

3. A method according to claim 1, further comprising, prior to the controlling step, sensing an angle of the main boom relative to gravity.

4. A method according to claim 3, wherein the sensing step comprises measuring an angle of the tower boom relative to gravity, determining a relative position of the tower boom and the main boom, and determining the main boom angle relative to gravity based on the measured angle and the relative position.

5. A method of controlling boom angles in a boom lift vehicle, the boom lift vehicle including a tower boom pivotally coupled at one end to a vehicle base for tower lift function and rotatable relative to the vehicle base for swing function, and a

telescoping main boom pivotally coupled to an opposite end of the tower boom for main lift function and main telescope function, the method comprising:

defining a tower boom elevation angle as a maximum allowable tower boom angle relative to the vehicle base for transport; and

controlling the main boom when the tower boom is below the tower boom elevation angle and when performing at least one of the swing function, the main telescope function, or vehicle drive, the controlling step being practiced by adjusting a main boom angle relative to gravity to reduce effects of changes to the main boom angle.

6. A method according to claim 5, further comprising controlling the tower boom when the tower boom is above the tower boom elevation angle and when performing at least one of the main lift function, the main telescope function, the swing function or vehicle drive, the controlling step being practiced by adjusting a tower boom angle relative to gravity to reduce effects of changes to the tower boom angle.

7. A method according to claim 5, further comprising, prior to the controlling step, sensing an angle of the main boom relative to gravity.

8. A method according to claim 7, wherein the sensing step comprises measuring an angle of the tower boom relative to gravity, determining a relative position of the tower boom and the main boom, and determining the main boom angle relative to gravity based on the measured angle and the relative position.

9. A boom lift vehicle comprising:

a vehicle base;

a tower boom pivotally coupled at one end to the vehicle base for tower lift function and rotatable relative to the vehicle base for swing function;

a main boom pivotally coupled to an opposite end of the tower boom for main lift function; and

a control system controlling positions of the tower boom and the main boom; the control system defining a tower boom elevation angle as a maximum allowable tower boom angle relative to the vehicle base for transport, wherein the control system is configured to control the main boom when the tower boom is below the tower boom elevation angle to maintain a main boom angle relative to gravity at a first set point angle,

the first set point angle being determined as the main boom angle (1) at a start of the swing function or vehicle drive, or (2) at a conclusion of the main lift function when combined with at least one of the swing function or vehicle drive.

10. A boom lift vehicle according to claim 9, wherein the main boom comprises telescoping sections for main telescope function, and wherein the control system is further configured to control the tower boom when the tower boom is above the tower boom elevation angle to maintain a tower boom angle relative to gravity at a second set point angle, the second set point angle being determined as the tower boom angle (1) at a start of the main lift function, the main telescope function, the swing function or vehicle drive, or (2) at a conclusion of the tower lift function when combined with at least one of the main lift function, the main telescope function, the swing function or vehicle drive.

11. A boom lift vehicle according to claim 10, further comprising means for sensing an angle of the main boom relative to gravity.

12. A boom lift vehicle according to claim 11, wherein the sensing means comprises:

an inclinometer attached to the tower boom, the inclinometer measuring an angle of the tower boom relative to gravity; and

a rotation sensor coupled between the tower boom and the main boom, the rotation sensor determining a relative position of the tower boom and the main boom,

wherein the control system determines the main boom angle relative to gravity based on output from the inclinometer and the rotation sensor.